K051122

AUG 1 - 2005

510(k) Summary

General information:

Device Generic Name: Automated Differential Cell Counter

Device Trade Name: iTAg MHC Tetramer-CMV

Device Classification: 21 CFR 864.5220

Applicant Name and Address Beckman Coulter, Inc.
7330 Carroll Rd.
San Diego, CA 92121

Device Description:

iTAg™ MHC Tetramer CMV is similar to existing CD (cluster differentiation) technology, measuring subsets of an individual's total leukocyte population. The tetramer kits include five tetramers specific for particular CD3+CD8+ cell receptors. While 5 alleles are provided for this assay, an individual's analysis may use up to 4 of these 5 tetramers.

Tetramers enumerate CD3+CD8+ subsets by flow cytometry, similar to antibodies: Same specimen (whole blood), indication (identification and enumeration of lymphocyte populations), platform (flow cytometry), fluorochromes, Flow-Count Fluorospheres, and accessory reagents. The assay components include:

- Vials of anti-CD8 FITC
- Vials of anti-CD4 PE
- Vials of anti-CD3 PC5
- Vials of Flow-Count Beads
- Vials of lysing agent
- Vials of fixative
- Up to 5 vials of individual Tetramers labeled with PE
- Vials of negative Tetramer labeled with PE

Summary of Studies

Specificity: There was no significant interference from common interferents such as Monocytes, graulocytes, platelets and red blood cells. There was no significant interference from similar viral response (EBV). The tetramers were specific for the identified alleles.

Linear Range: The Deming regression analysis showed acceptable correlation between the expected and actual values for absolute counts of CMV tetramer positive cells. The upper limit of the linear range for tetramer-positive cells varied by allele depending on the sample tested, but ranged from 119 to >300 cells per microliter.

Accuracy and Recovery: All of the tetramers tested demonstrated acceptable recovery based on the percent recovery for cells per microliter and % tetramer positive. The overall percent recovery across three tetramers was 96%.

Analytical Sensitivity: Functional assay sensitivity was determined to be 1.0 cell per microliter for absolute counts and 0.2% tetramer positive.

Reproducibility:

- Intra-laboratory (within-lab) assay reproducibility ranged between 1.3% CV and 16.3% CV.
- Inter-laboratory (between-lab) assay reproducibility ranged from 0.9% CV to 13.3% CV when performed at Beckman Coulter Inc. facilities, and from 2.6% CV to 29.6% CV when performed at the Beckman Coulter Inc. and two external sites.

Expected Reference Range: The expected reference range based on apparently healthy CMV sero-negative donors was 0 to 0.8 tetramer cells per microliter. The reference range determined for apparently healthy CMV sero-positive donors was 0 to 46.6 cells per microliter.

Instrument comparison: BD FACSCalibur flow cytometer and the BCI EPICS-XL flow cytometer were tested. The flow cytometers were shown to give comparable results and can be used interchangeably. The Deming regression analysis showed good correlation between the BD FACSCalibur flow cytometer and the BCI EPICS-XL flow cytometer for tetramer absolute counts with an equation of $y = 0.9697x - 0.3255$, $r = 0.9978$, where y is the BD FACSCalibur flow cytometer and x is the BCI EPICS-XL flow cytometer.
The Deming regression analysis also showed good correlation between the flow cytometers for % tetramer positive with an equation of $y = 0.9800x - 0.0152$, $r = 0.9982$, where y is the BD FACSCalibur flow cytometer and x is the BCI EPICS-XL flow cytometer.

In addition to the above study, BCI FC500 flow cytometer and the BCI EPICS-XL flow cytometers were tested. The flow cytometers were shown to give comparable results and can be used interchangeably. The Deming regression analysis showed acceptable correlation between the BCI FC500 flow cytometer and the BCI EPICS-

XL flow cytometer for CMV tetramer+ absolute counts with an equation of y = 0.9812X +0.1527, r = 0.9921, where y is the BCI FC500 flow cytometer and x is the BCI EPICS-XL flow cytometer.
The Deming regression analysis also showed acceptable correlation between the flow cytometers for CMV tetramer+ percent with an equation of y = 1.0426X - 0.0448, r = 0.995, where y is the BCI FC500 flow cytometer and x is the BCI EPICS-XL flow cytometer.
The imprecision for CMV tetramer+ absolute counts was comparable between instruments and averaged less than 10% CV for all samples tested.

Clinical Data: The samples were HLA-typed and tested for CMV immune status by immunoassay. The data demonstrate utility for Beckman Coulter's iTAg MHC Tetramer-CMV in monitoring CMV-specific CD8+ T cells to assess immune status and risk of recurrent or persistent CMV infection or CMV disease (CMVD) in immunosuppressed stem cell transplant recipients, allowing clinicians to further refine pre-emptive therapeutic strategies in appropriate high-risk populations.

Conclusion

The data generated demonstrates acceptable non-clinical (laboratory) performance, and good correlation between the iTAg MHC Tetramer-CMV and the predicate device.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

AUG 1 - 2005

Beckman Coulter, Inc.
c/o Ms Mara Caler
7330 Carroll Rd.
San Diego, CA 92121

Re: k051122
Trade/Device Name: iTAg MHC Tetramer - CMV
Regulation Number: 21 CFR 864.5220
Regulation Name: Automated differential cell counter
Regulatory Class: Class II
Product Code: GKZ
Dated: April 29, 2005
Received: May 2, 2005

Dear Ms Caler:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to such additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

This letter will allow you to begin marketing your device as described in your Section 510(k) premarket notification. The FDA finding of substantial equivalence of your device to legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific information about the application of labeling requirements to your device, or questions on the promotion and advertising of your device, please contact the Office of In Vitro Diagnostic Device Evaluation and Safety at (240) 276-0484. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 443-6597 or at its Internet address http://www.fda.gov/cdrh/industry/support/index.html

Sincerely yours,

Robert L. Becker, Jr., MD, Ph.D
Director
Division of Immunology and Hematology
Office of *In Vitro* Diagnostic Device
Evaluation and Safety
Center for Devices and
Radiological Health

Enclosure

Indications for Use

510(k) Number (if known): K051122

Device Name: iTAg MHC Tetramer CMV assay

Indications For Use:
Beckman Coulter's iTAg MHC Tetramer-CMV is for the identification and enumeration of cytomegalovirus (CMV) -specific CD8+ lymphocytes in whole blood by flow cytometry, and for the assessment of CMV-specific immune status and risk of CMV reactivation in immunosuppressed stem cell transplant recipients. The assay is limited to individuals with the following HLA types: A*0101, A*0201, B*0702, B*0801,B*3501.

(a) *Classification name:* Automated Cell Counter, 21 CFR 864.5220
(b) *Classification.* Class II

Prescription Use ✓ AND/OR Over-The-Counter Use

(Part 21 CFR 801 Subpart D) (21 CFR 801 Subpart C)

(PLEASE DO NOT WRITE BELOW THIS LINE-CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of Device Evaluation (ODE)

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Maria M Chan
Division Sign-Off

Office of In Vitro Diagnostic Device
Evaluation and Safety

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